

CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-12-16
23 April – 2 May, 2012
Total Number of Sea Days - 10

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

143 camera-trap deployments
27 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 23 April 2012 for a Southeast Fishery-Independent Survey (SEFIS) research cruise in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 27.22 and 31.55° N. A total of 143 stations were sampled with camera-trap gear over 10 sea days between 19 and 73 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, with 2 or 3 mounted high-definition video cameras, were utilized for (a) hardbottom reef fish community assessments, (b) collection of reef fish for biological samples (e.g., otoliths and gonads), and (c) comparative gear sampling (cameras versus traps).
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen, and turbidity) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two or three high definition video cameras mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. A Canon[®] camera (model HF S200) was attached above the mouth of the trap, and a GoPro[®] camera (model HD Hero with a flat-lens housing) was attached above the nose of the trap (Figure 1). Additionally, some traps had a third camera (GoPro) attached to the side of the trap, looking inward towards the mouth opening, so that reef fish entries and exits could be recorded. Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the snapper-grouper complex) were further processed for additional lengths and biological samples

(otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples were sent to the Marine Resources Monitoring, Assessment, and Prediction (MARMAP) Program laboratory for processing, and video files were brought to the NMFS Beaufort laboratory for further processing and analysis.

Environmental Data Collection

Environmental data were collected with a Seabird “Conductivity, Temperature and Depth” instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS; version 4). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (°C), salinity (psu), dissolved oxygen (mg/L), and backscatter. CTD data were archived for further processing at the Beaufort laboratory. SCS software was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Camera-Trap Sampling

143 stations were sampled with camera-trap gear (Table 1, Figure 2).

Environmental Data Collection

27 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data will be processed back at the lab using Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS–Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth (m), date and time for each fishing event (camera-trap, Gear=324) and CTD cast (Gear=298) conducted on the SH-12-16 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection	Gear ID	Date	Start Time	Start Latitude	Start Longitude	Start Depth
123001	324	4/24/2012	12:11	30.61	-81.18	22
123002	324	4/24/2012	12:17	30.62	-81.18	23
123003	324	4/24/2012	12:28	30.62	-81.18	22
123004	324	4/24/2012	12:33	30.62	-81.18	22
123005	324	4/24/2012	12:38	30.62	-81.17	22
123006	324	4/24/2012	12:45	30.61	-81.17	21
123007	298	4/24/2012	13:18	30.60	-81.16	22
123008	324	4/24/2012	17:29	30.49	-81.22	20
123009	324	4/24/2012	17:34	30.49	-81.22	19
123010	324	4/24/2012	17:39	30.49	-81.21	20
123011	324	4/24/2012	17:46	30.49	-81.21	19
123012	324	4/24/2012	17:51	30.48	-81.22	19
123013	324	4/24/2012	17:55	30.49	-81.22	19
123014	298	4/24/2012	18:04	30.48	-81.21	20
123015	324	4/25/2012	11:44	29.17	-80.61	26
123016	324	4/25/2012	11:49	29.18	-80.61	24
123017	324	4/25/2012	11:54	29.18	-80.60	26
123018	324	4/25/2012	11:57	29.17	-80.60	24
123019	324	4/25/2012	12:06	29.17	-80.59	26
123020	324	4/25/2012	12:12	29.17	-80.59	26
123021	298	4/25/2012	12:18	29.17	-80.58	27
123022	324	4/25/2012	14:44	29.17	-80.58	28
123023	324	4/25/2012	14:48	29.17	-80.58	27
123024	324	4/25/2012	14:52	29.18	-80.58	25
123025	324	4/25/2012	15:00	29.17	-80.57	27
123026	324	4/25/2012	15:03	29.17	-80.57	29
123027	298	4/25/2012	15:08	29.17	-80.57	27
123028	324	4/25/2012	17:16	29.17	-80.56	26
123029	324	4/25/2012	17:21	29.17	-80.56	26
123030	324	4/25/2012	17:27	29.16	-80.55	24
123031	324	4/25/2012	17:34	29.16	-80.55	24
123032	324	4/25/2012	17:38	29.16	-80.54	25
123033	324	4/25/2012	17:41	29.16	-80.54	25
123034	298	4/25/2012	17:45	29.16	-80.54	29
123035	324	4/25/2012	19:53	29.14	-80.51	25
123036	324	4/25/2012	19:59	29.13	-80.50	26

123037	324	4/25/2012	20:05	29.13	-80.50	26
123038	324	4/25/2012	20:08	29.12	-80.50	27
123039	298	4/25/2012	20:10	29.12	-80.50	26
123040	324	4/26/2012	12:05	27.26	-80.02	45
123041	324	4/26/2012	12:15	27.26	-80.02	44
123042	324	4/26/2012	12:21	27.27	-80.02	43
123043	324	4/26/2012	12:29	27.27	-80.02	45
123044	324	4/26/2012	12:39	27.27	-80.02	43
123045	324	4/26/2012	12:48	27.28	-80.02	43
123046	298	4/26/2012	13:01	27.26	-80.01	53
123047	324	4/26/2012	14:43	27.28	-80.02	46
123048	324	4/26/2012	14:48	27.27	-80.02	44
123049	324	4/26/2012	14:56	27.27	-80.02	42
123050	324	4/26/2012	15:01	27.27	-80.02	43
123051	324	4/26/2012	15:05	27.27	-80.02	46
123052	324	4/26/2012	15:10	27.27	-80.02	43
123053	298	4/26/2012	15:20	27.28	-80.02	46
123054	324	4/26/2012	17:51	27.23	-80.05	24
123055	324	4/26/2012	17:55	27.23	-80.05	24
123056	298	4/26/2012	18:01	27.23	-80.05	23
123057	324	4/26/2012	20:22	27.33	-80.07	25
123058	324	4/26/2012	20:28	27.34	-80.07	25
123059	324	4/26/2012	20:43	27.33	-80.07	23
123060	298	4/26/2012	20:50	27.34	-80.07	25
123061	324	4/27/2012	11:49	27.43	-80.07	24
123062	324	4/27/2012	11:56	27.43	-80.07	24
123063	324	4/27/2012	12:02	27.44	-80.07	25
123064	324	4/27/2012	12:06	27.44	-80.07	23
123065	324	4/27/2012	12:11	27.44	-80.07	23
123066	324	4/27/2012	12:16	27.45	-80.07	24
123067	298	4/27/2012	12:27	27.43	-80.07	25
123068	324	4/27/2012	15:01	27.45	-80.07	24
123069	324	4/27/2012	15:06	27.46	-80.07	23
123070	324	4/27/2012	15:12	27.46	-80.08	25
123071	324	4/27/2012	15:17	27.46	-80.08	23
123072	324	4/27/2012	15:20	27.46	-80.07	24
123073	324	4/27/2012	15:26	27.47	-80.08	23
123074	298	4/27/2012	15:34	27.45	-80.07	24
123075	324	4/27/2012	19:59	27.71	-80.12	26
123076	324	4/27/2012	20:06	27.71	-80.12	24
123077	324	4/27/2012	20:11	27.72	-80.12	27

123078	324	4/27/2012	20:16	27.72	-80.13	23
123079	298	4/27/2012	20:25	27.71	-80.12	26
123080	324	4/28/2012	11:51	28.71	-80.14	54
123081	324	4/28/2012	12:01	28.72	-80.14	52
123082	324	4/28/2012	12:09	28.72	-80.14	52
123083	324	4/28/2012	12:16	28.72	-80.14	52
123084	324	4/28/2012	12:23	28.73	-80.14	56
123085	324	4/28/2012	12:29	28.73	-80.14	54
123086	298	4/28/2012	12:41	28.71	-80.14	58
123087	324	4/28/2012	15:19	28.90	-80.18	52
123088	324	4/28/2012	15:26	28.89	-80.18	52
123089	324	4/28/2012	15:39	28.88	-80.17	52
123090	324	4/28/2012	15:48	28.88	-80.17	52
123091	324	4/28/2012	15:55	28.87	-80.17	52
123092	324	4/28/2012	16:03	28.87	-80.17	52
123093	298	4/28/2012	16:18	28.90	-80.18	52
123094	324	4/28/2012	18:08	28.95	-80.18	53
123095	324	4/28/2012	18:14	28.95	-80.18	58
123096	324	4/28/2012	18:24	28.95	-80.18	53
123097	324	4/28/2012	18:29	28.96	-80.18	55
123098	324	4/28/2012	18:35	28.96	-80.18	53
123099	324	4/28/2012	18:46	28.96	-80.18	53
123100	298	4/28/2012	18:56	28.95	-80.18	57
123101	324	4/28/2012	20:54	29.00	-80.27	43
123102	324	4/28/2012	21:00	29.00	-80.27	43
123103	324	4/28/2012	21:06	29.00	-80.27	43
123104	298	4/28/2012	21:12	29.00	-80.27	44
123105	324	4/29/2012	11:49	29.77	-80.44	38
123106	324	4/29/2012	11:57	29.77	-80.46	35
123107	324	4/29/2012	12:02	29.77	-80.46	34
123108	324	4/29/2012	12:07	29.76	-80.45	35
123109	324	4/29/2012	12:11	29.76	-80.45	33
123110	324	4/29/2012	12:17	29.75	-80.45	34
123111	298	4/29/2012	12:29	29.77	-80.44	39
123112	324	4/29/2012	14:24	29.73	-80.45	35
123113	324	4/29/2012	14:31	29.73	-80.45	35
123114	324	4/29/2012	14:49	29.73	-80.45	35
123115	324	4/29/2012	14:56	29.70	-80.48	33
123116	324	4/29/2012	15:00	29.70	-80.48	34
123117	324	4/29/2012	15:08	29.70	-80.50	34
123118	298	4/29/2012	15:35	29.74	-80.45	35

123119	324	4/29/2012	17:22	29.73	-80.47	37
123120	324	4/29/2012	17:29	29.73	-80.46	34
123121	324	4/29/2012	17:36	29.73	-80.46	35
123122	324	4/29/2012	17:42	29.73	-80.47	36
123123	324	4/29/2012	17:51	29.74	-80.47	36
123124	324	4/29/2012	17:59	29.74	-80.46	36
123125	298	4/29/2012	18:08	29.73	-80.47	37
123126	324	4/29/2012	20:09	29.78	-80.43	42
123127	324	4/29/2012	20:15	29.78	-80.43	42
123128	324	4/29/2012	20:19	29.78	-80.43	40
123129	324	4/29/2012	20:24	29.77	-80.43	42
123130	324	4/29/2012	20:31	29.77	-80.44	39
123131	324	4/29/2012	20:43	29.77	-80.44	39
123132	298	4/29/2012	20:55	29.78	-80.43	42
123133	324	4/30/2012	11:32	31.30	-79.86	56
123134	324	4/30/2012	11:41	31.29	-79.86	51
123135	324	4/30/2012	11:47	31.29	-79.86	52
123136	324	4/30/2012	11:53	31.28	-79.87	50
123137	324	4/30/2012	12:01	31.28	-79.87	51
123138	324	4/30/2012	12:08	31.27	-79.87	50
123139	298	4/30/2012	12:31	31.30	-79.85	59
123140	324	4/30/2012	14:11	31.27	-79.87	52
123141	324	4/30/2012	14:16	31.26	-79.87	50
123142	324	4/30/2012	14:22	31.26	-79.88	50
123143	324	4/30/2012	14:28	31.26	-79.88	55
123144	324	4/30/2012	14:34	31.25	-79.88	48
123145	324	4/30/2012	14:39	31.25	-79.88	50
123146	298	4/30/2012	14:56	31.27	-79.87	58
123147	324	4/30/2012	18:28	31.48	-79.76	64
123148	324	4/30/2012	18:36	31.48	-79.74	69
123149	324	4/30/2012	18:45	31.48	-79.73	72
123150	324	4/30/2012	18:51	31.49	-79.72	73
123151	324	4/30/2012	18:56	31.49	-79.73	70
123152	324	4/30/2012	19:01	31.49	-79.74	69
123153	298	4/30/2012	19:13	31.49	-79.73	70
123154	324	4/30/2012	21:04	31.50	-79.73	70
123155	324	4/30/2012	21:10	31.50	-79.72	70
123156	324	4/30/2012	21:16	31.51	-79.72	71
123157	324	4/30/2012	21:21	31.51	-79.72	73
123158	298	4/30/2012	21:24	31.51	-79.72	73
123159	324	5/1/2012	12:03	31.55	-79.70	71

123160	324	5/1/2012	12:08	31.55	-79.71	69
123161	324	5/1/2012	12:19	31.55	-79.73	65
123162	324	5/1/2012	12:27	31.54	-79.73	61
123163	324	5/1/2012	12:33	31.54	-79.74	60
123164	298	5/1/2012	13:01	31.55	-79.70	73
123165	324	5/1/2012	15:01	31.53	-79.72	72
123166	324	5/1/2012	15:11	31.54	-79.73	61
123167	324	5/1/2012	15:19	31.53	-79.74	59
123168	324	5/1/2012	15:26	31.53	-79.74	59
123169	324	5/1/2012	15:32	31.53	-79.75	58
123170	298	5/1/2012	15:49	31.53	-79.72	71



Figure 1. Chevron trap with video cameras attached over the nose and mouth positions.

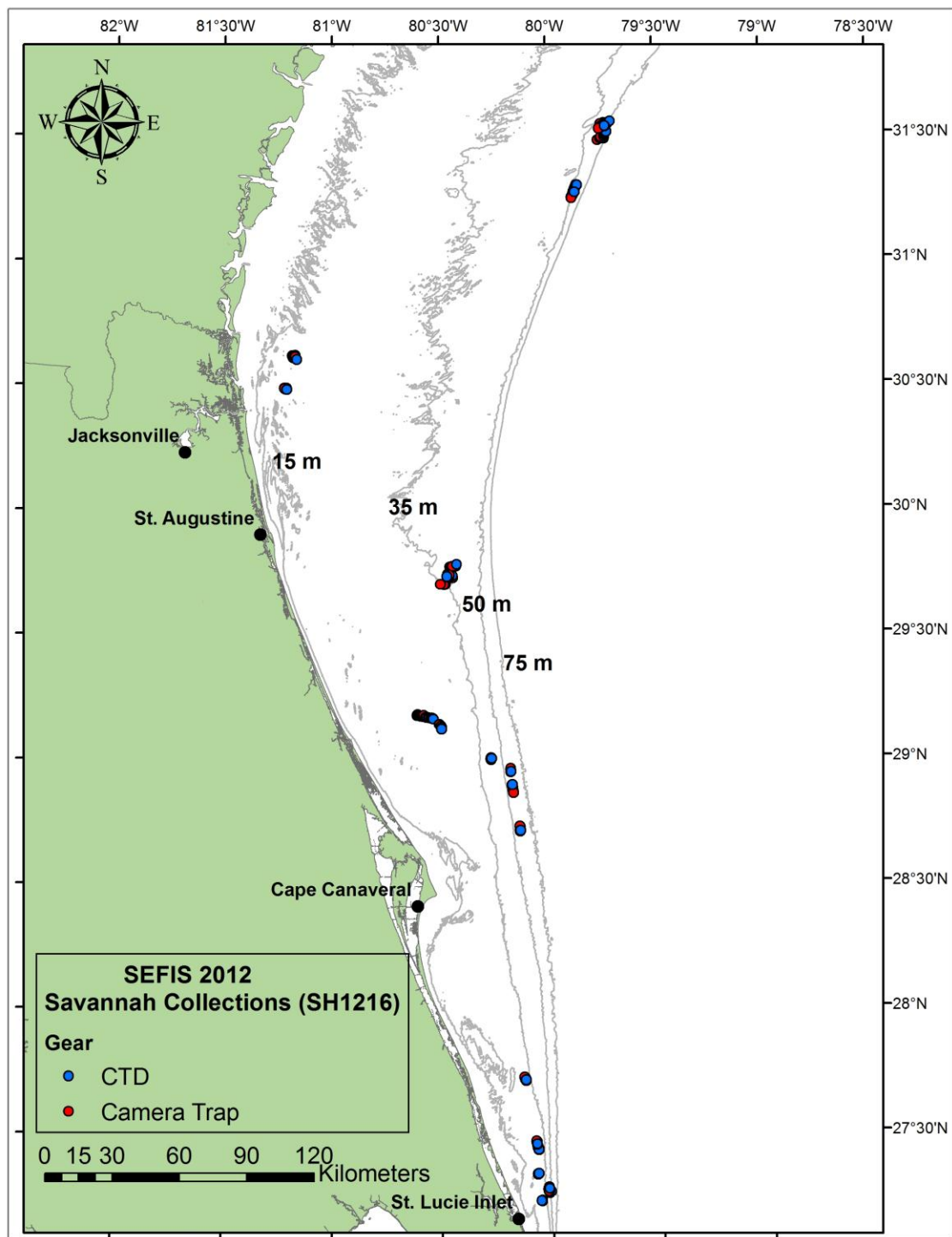


Figure 2. Locations of stations sampled with camera-trap and CTD gear on the SH-12-16 survey. Note that symbols overlap in many cases.

Cruise Report Prepared by: Zeb Schobernd, Nate Bacheler, and Christina Schobernd

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